

SUCCESSFUL USE OF THE NOCTURNAL URINE ALARM FOR DIURNAL ENURESIS

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We report the effects of using a urine alarm, typically employed for nocturnal enuresis, to treat chronic diurnal enuresis in a 15-year-old female resident at Boys' Town. The results of an ABAB reversal design indicate that the alarm eliminated wetting in both treatment phases and that continence was maintained at 3- and 6-month follow-up.

DESCRIPTORS: enuresis, incontinence, behavioral pediatrics, negative reinforcement

Diurnal enuresis affects approximately 1% of children over the age of 5 years and is more common in girls. The literature reports a variety of potential treatments (e.g., scheduling, positive practice, punishment), but there have been few experimental tests of these treatments. The limited testing of any treatment for diurnal enuresis contrasts with the extensive testing of the urine alarm for nocturnal enuresis—testing that repeatedly has shown the urine alarm to be a simple, efficient, and effective treatment for nocturnal enuresis (Friman, 1986; Friman & Warzak, 1990). Despite its widely documented success with nighttime wetting, the urine alarm is rarely even nominated as a potential treatment for daytime wetting. We found just one relevant study, and it reported neither individual data nor an attempt to establish a functional relation between the alarm and reduced wetting (Halliday, Meadow, & Berg, 1987).

One potential reason for the limited number of studies on treating diurnal enuresis with the urine alarm is that the rationale for its use may be more evident for nocturnal than for diurnal enuresis (the alarm increases the salience of bladder fullness during sleep). Some of the mechanisms purportedly involved in alarm-based treatment of nocturnal enuresis (e.g., negative reinforcement of bladder fullness discrimination, classical conditioning of sphincter control) may also be relevant to diurnal enuresis. Therefore, we evaluated use of the urine alarm with a girl who displayed treatment-resistant diurnal enuresis at home but not at school.

METHOD: The subject was a gregarious 15-year-old female resident of a residential care program (Boys' Town) whose entry diagnostic evaluations revealed situational depression, attention deficit hyperactivity disorder, and conduct disorder (for which she received successful treatments). She also had a longstanding history of daytime wetting, for which a variety of treatments had been attempted without success (e.g., positive attention and points for continence, intensive scheduling).

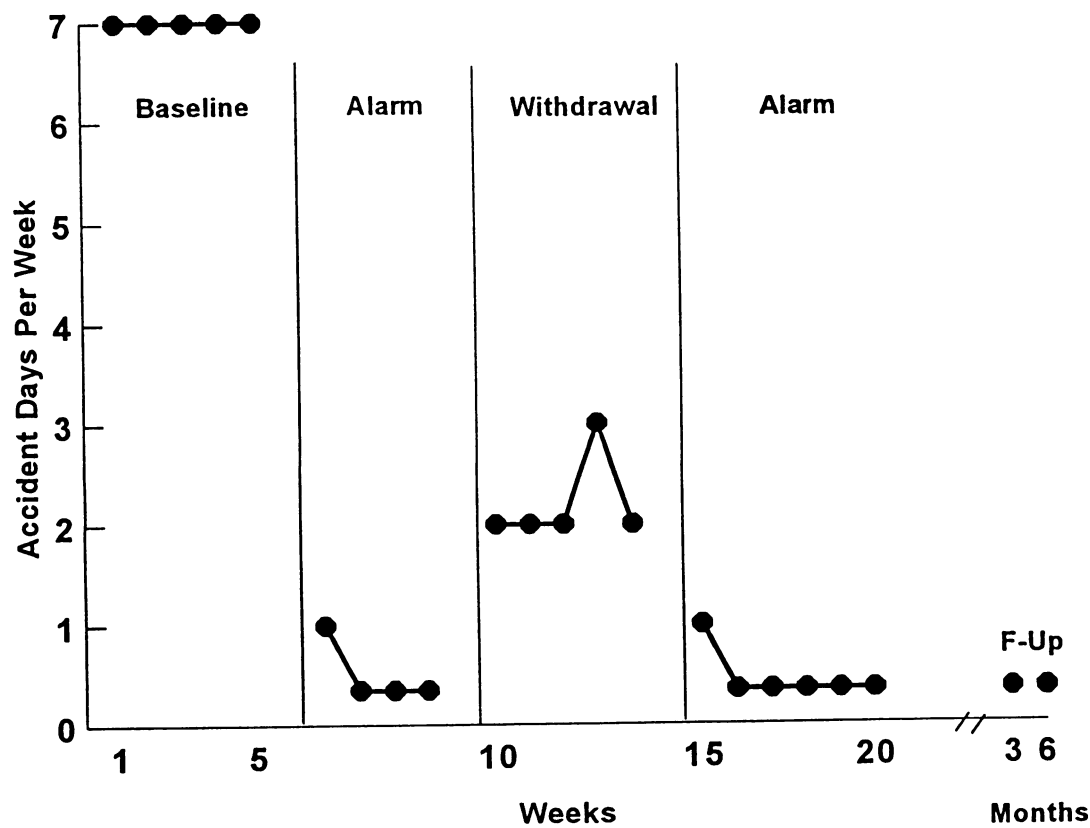
Measurement. Her wetness or dryness was established using commercially available sanitary pads which were collected by her female family teacher an average of twice a day (e.g., shortly after school and before bed) throughout the study. A damp or wet pad on either or both occasions was recorded as an accident day. To establish reliability, the female Family Teacher and her female assistant independently examined the pad on 46 of 284 occasions and there were no disagreements.

Procedures and experimental design. We used a Wet Stop® alarm, which can be purchased over the counter in pharmacies across the country. It has a moisture-sensitive switching system, one end of which attaches within underwear and the other unobtrusively to outer clothing. Two conditions, alarm present and alarm absent, were alternated in an ABAB withdrawal design. The withdrawal was begun at the start of the subject's menstruation and was continued for 5 weeks. During the alarm-absent condition, only the pad checks were conducted. Follow-up data were collected on a single day after 3 and 6 months.

RESULTS AND DISCUSSION: The data show that the alarm reduced accidents to zero almost immediately (see the figure). In fact, during the first treatment phase, only two alarm episodes were noted. The Family Teachers reported that following each alarm activation, the child's face turned red and she quickly departed for the bathroom. When treatment was withdrawn, accidents increased and occurred about 2 to 3 days per week. In the second alarm-present condition, only one activation of the alarm occurred. No accidents occurred at 3- and 6-month follow-up.

These results support the use of the alarm for treatment of daytime wetting. In addition, the results may suggest a different functional mechanism than is generally thought to be involved in urine alarm treatment of nocturnal enuresis. First, the rapidity of treatment effects (continence after two alarm activations) suggests that neither discrimination of bladder fullness nor classical conditioning of sphincter control were functional mechanisms, in that both would presumably require more than two learning trials. The fact that the client was continent at school also argues against these explanations. Second, anecdotal reports from the family teachers indicated that the client may have expressed embarrassment when the alarm sounded, suggesting the possibility that negative reinforcement obtained from avoidance of aversive audience variables may have resulted in the rapid establishment of continence. Our confidence in the latter explanation would increase with convergent findings from research employing two types of alarms: sound based, such as the one used here (these alert the child and audience), and vibration based (these alert only the child). Our explanation also diverges from that of Halliday et al. (1987), who asserted that the principal role of the alarm was to remind children when to go to the bathroom. That may be true in some cases, but the child in this study had previously been on an intensive reminder program with no effects.

There are at least two caveats to consider before using the alarm for diurnal enuresis. First, as suggested by our anecdotal evidence, the alarm may cause embarrassment that could be harmful for highly sensitive, socially withdrawn children. The girl in this case did not exhibit social avoidance during her diagnostic evaluations at entry and was very socially active in the program. Second, although not a problem in this case, some children may attempt to remove the alarm, thus instigating



a second problem (noncompliance). Despite the caveats and the tentative nature of our explanation, our results do extend the scarce literature on use of alarms for diurnal enuresis by using a reversal design to demonstrate functional control and by treating a child with a history of emotional problems.

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